

What is claimed is:

1. A method of making a reduced-density, coated particulate comprising the steps of:

coating a particulate material with a coating material to create a coated particulate; and,

adhering a density-reducing material to the surface of the coated particulate on-the-fly to create reduced-density, coated particulates.

2. The method of claim 1 wherein the coating material comprises a resin composition.

3. The method of claim 2 wherein the resin composition comprises a hardenable resin component comprising a hardenable resin and a hardening agent component comprising a liquid hardening agent, a silane coupling agent, and a surfactant.

4. The method of claim 2 wherein the resin composition comprises a furan-based resin comprising furfuryl alcohol, a mixture furfuryl alcohol with an aldehyde, a mixture of furan resin and phenolic resin or mixtures thereof.

5. The method of claim 4 further comprising a solvent comprising 2-butoxy ethanol, butyl acetate, furfuryl acetate, or mixtures thereof.

6. The method of claim 2 wherein the resin composition comprises a phenolic-based resin comprising terpolymer of phenol, phenolic formaldehyde resin, a mixture of phenolic and furan resin, or mixtures thereof.

7. The method of claim 6 wherein the resin composition further comprises a solvent comprising butyl acetate, butyl lactate, furfuryl acetate, 2-butoxy ethanol, or mixtures thereof.

8. The method of claim 2 wherein the resin composition comprises a HT epoxy-based resin comprising bisphenol A-epichlorohydrin resin, polyepoxide resin, novolac resin, polyester resin, glycidyl ethers, or mixtures thereof.

9. The method of claim 8 wherein the resin composition further comprises a solvent comprising dimethyl sulfoxide, dimethyl formamide, dipropylene glycol methyl ether, dipropylene glycol dimethyl ether, dimethyl formamide, diethylene glycol methyl ether, ethylene glycol butyl ether, diethylene glycol butyl ether, propylene carbonate, d'limonene, fatty acid methyl esters, or mixtures thereof.

10. The method of claim 2 wherein the resin composition comprises a phenol/phenol formaldehyde/furfuryl alcohol resin comprising from about 5% to about 30% phenol, from about 40% to about 70% phenol formaldehyde, from about 10 to about 40% furfuryl alcohol, from about 0.1% to about 3% of a silane coupling agent, and from about 1% to about 15% of a surfactant.
11. The method of claim 1 wherein the coating material comprises a tackifying composition.
12. The method of claim 11 wherein the tackifying composition comprises a polyamide, a polyester, a polycarbonate, a polycarbamate, a natural resin, or a combination thereof.
13. The method of claim 2 wherein the density-reducing material comprises micro-material.
14. The method of claim 1 wherein the density-reducing material comprises low-density material similar in size to the particulate material.
15. The method of claim 1 wherein the particulate material is coated with the coating material on-the-fly.
16. The method of claim 1 further comprising the steps of, after adhering the density-reducing material to the surface of the coated particulate on-the-fly:
  - providing a servicing fluid;
  - suspending the reduced-density, coated particulates in the servicing fluid.
17. The method of claim 16 wherein the reduced-density, coated particulates are suspended in the servicing fluid on-the-fly.

18. A method of treating a subterranean formation comprising the steps of:  
providing a servicing fluid comprising reduced-density, coated particulates wherein the method of making the reduced-density, coated particulates comprises the steps of:  
coating a particulate material with a coating material to create a coated particulate; and,  
adhering a density-reducing material to the surface of the coated particulate on-the-fly to create reduced-density, coated particulates; and,  
pumping the servicing fluid into a subterranean formation.
19. The method of claim 18 wherein the coating material comprises a resin composition.
20. The method of claim 19 wherein the resin composition comprises a hardenable resin component comprising a hardenable resin and a hardening agent component comprising a liquid hardening agent, a silane coupling agent, and a surfactant.
21. The method of claim 19 wherein the resin composition comprises a furan-based resin comprising furfuryl alcohol, a mixture furfuryl alcohol with an aldehyde, a mixture of furan resin and phenolic resin or mixtures thereof.
22. The method of claim 21 further comprising a solvent comprising 2-butoxy ethanol, butyl acetate, furfuryl acetate, or mixtures thereof.
23. The method of claim 19 wherein the resin composition comprises a phenolic-based resin comprising terpolymer of phenol, phenolic formaldehyde resin, a mixture of phenolic and furan resin, or mixtures thereof.
24. The method of claim 23 wherein the resin composition further comprises a solvent comprising butyl acetate, butyl lactate, furfuryl acetate, 2-butoxy ethanol, or mixtures thereof.
25. The method of claim 19 wherein the resin composition comprises a HT epoxy-based resin comprising bisphenol A-epichlorohydrin resin, polyepoxide resin, novolac resin, polyester resin, glycidyl ethers, or mixtures thereof.
26. The method of claim 25 wherein the resin composition further comprises a solvent comprising dimethyl sulfoxide, dimethyl formamide, dipropylene glycol methyl ether, dipropylene glycol dimethyl ether, dimethyl formamide, diethylene glycol methyl ether, ethylene

glycol butyl ether, diethylene glycol butyl ether, propylene carbonate, d'limonene, fatty acid methyl esters, or mixtures thereof.

27. The method of claim 19 wherein the resin composition comprises a phenol/phenol formaldehyde/furfuryl alcohol resin comprising from about 5% to about 30% phenol, from about 40% to about 70% phenol formaldehyde, from about 10 to about 40% furfuryl alcohol, from about 0.1% to about 3% of a silane coupling agent, and from about 1% to about 15% of a surfactant.

28. The method of claim 1 wherein the coating material comprises a tackifying composition.

29. The method of claim 28 wherein the tackifying composition material a polyamide, a polyester, a polycarbonate, a polycarbamate, a natural resin, or a combination thereof.

30. The method of claim 19 wherein the density-reducing material comprises micro-material.

31. The method of claim 18 wherein the density-reducing material comprises low-density material similar in size to the particulate material.

32. The method of claim 18 wherein the particulate material is coated with the coating material on-the-fly.

33. The method of claim 18 further comprising the steps of, after adhering the density-reducing material to the surface of the coated particulate on-the-fly:

providing a servicing fluid;

suspending the reduced-density, coated particulates in the servicing fluid.

34. The method of claim 33 wherein the reduced-density, coated particulates are suspended in the servicing fluid on-the-fly.

35. A method of fracturing a subterranean formation comprising the steps of:  
providing a fracturing fluid comprising reduced-density, coated particulates wherein the method of making the reduced-density, coated particulates comprises the steps of:  
coating a particulate material with a coating material to create a coated particulate; and,  
adhering a density-reducing material to the surface of the coated particulate on-the-fly to create reduced-density, coated particulates; and,  
placing fracturing fluid into the subterranean formation at a pressure sufficient to create at least one fracture therein; and  
removing the fracturing fluid and leaving at least a portion of the coated proppant in the fracture.
36. The method of claim 35 wherein the coating material comprises a resin composition.
37. The method of claim 36 wherein the resin composition comprises a hardenable resin component comprising a hardenable resin and a hardening agent component comprising a liquid hardening agent, a silane coupling agent, and a surfactant.
38. The method of claim 36 wherein the resin composition comprises a furan-based resin comprising furfuryl alcohol, a mixture furfuryl alcohol with an aldehyde, a mixture of furan resin and phenolic resin or mixtures thereof.
39. The method of claim 38 further comprising a solvent comprising 2-butoxy ethanol, butyl acetate, furfuryl acetate, or mixtures thereof.
40. The method of claim 36 wherein the resin composition comprises a phenolic-based resin comprising terpolymer of phenol, phenolic formaldehyde resin, a mixture of phenolic and furan resin, or mixtures thereof.
41. The method of claim 40 wherein the resin composition further comprises a solvent comprising butyl acetate, butyl lactate, furfuryl acetate, 2-butoxy ethanol, or mixtures thereof.
42. The method of claim 36 wherein the resin composition comprises a HT epoxy-based resin comprising bisphenol A-epichlorohydrin resin, polyepoxide resin, novolac resin, polyester resin, glycidyl ethers, or mixtures thereof.

43. The method of claim 42 wherein the resin composition further comprises a solvent comprising dimethyl sulfoxide, dimethyl formamide, dipropylene glycol methyl ether, dipropylene glycol dimethyl ether, dimethyl formamide, diethylene glycol methyl ether, ethylene glycol butyl ether, diethylene glycol butyl ether, propylene carbonate, d'limonene, fatty acid methyl esters, or mixtures thereof.

44. The method of claim 36 wherein the resin composition comprises a phenol/phenol formaldehyde/furfuryl alcohol resin comprising from about 5% to about 30% phenol, from about 40% to about 70% phenol formaldehyde, from about 10 to about 40% furfuryl alcohol, from about 0.1% to about 3% of a silane coupling agent, and from about 1% to about 15% of a surfactant.

45. The method of claim 35 wherein the coating material comprises a tackifying composition.

46. The method of claim 45 wherein the tackifying composition comprises a polyamide, a polyester, a polycarbonate, a polycarbamate, a natural resin, or a combination thereof.

47. The method of claim 36 wherein the density-reducing material comprises micro-material.

48. The method of claim 35 wherein the density-reducing material comprises low-density material similar in size to the particulate material.

49. The method of claim 35 wherein the particulate material is coated with the coating material on-the-fly.

50. A method of installing a gravel pack comprising the steps of:  
providing a gravel pack composition comprising a delivery fluid and reduced-density, coated particulates wherein the method of making the reduced-density, coated particulates comprises the steps of:  
coating a particulate material with a coating material to create a coated particulate; and,  
adhering a density-reducing material to the surface of the coated particulate on-the-fly to create reduced-density, coated particulates; and,  
introducing the gravel pack composition to the well bore so that the reduced-density, coated gravel particulates form a gravel pack substantially adjacent to the wellbore.
51. The method of claim 50 wherein the coating material comprises a resin composition.
52. The method of claim 51 wherein the resin composition comprises a hardenable resin component comprising a hardenable resin and a hardening agent component comprising a liquid hardening agent, a silane coupling agent, and a surfactant.
53. The method of claim 51 wherein the resin composition comprises a furan-based resin comprising furfuryl alcohol, a mixture furfuryl alcohol with an aldehyde, a mixture of furan resin and phenolic resin or mixtures thereof.
54. The method of claim 53 further comprising a solvent comprising 2-butoxy ethanol, butyl acetate, furfuryl acetate, or mixtures thereof.
55. The method of claim 51 wherein the resin composition comprises a phenolic-based resin comprising terpolymer of phenol, phenolic formaldehyde resin, a mixture of phenolic and furan resin, or mixtures thereof.
56. The method of claim 55 wherein the resin composition further comprises a solvent comprising butyl acetate, butyl lactate, furfuryl acetate, 2-butoxy ethanol, or mixtures thereof.
57. The method of claim 51 wherein the resin composition comprises a HT epoxy-based resin comprising bisphenol A-epichlorohydrin resin, polyepoxide resin, novolac resin, polyester resin, glycidyl ethers, or mixtures thereof.
58. The method of claim 57 wherein the resin composition further comprises a solvent comprising dimethyl sulfoxide, dimethyl formamide, dipropylene glycol methyl ether,

dipropylene glycol dimethyl ether, dimethyl formamide, diethylene glycol methyl ether, ethylene glycol butyl ether, diethylene glycol butyl ether, propylene carbonate, d'limonene, fatty acid methyl esters, or mixtures thereof.

59. The method of claim 51 wherein the resin composition comprises a phenol/phenol formaldehyde/furfuryl alcohol resin comprising from about 5% to about 30% phenol, from about 40% to about 70% phenol formaldehyde, from about 10 to about 40% furfuryl alcohol, from about 0.1% to about 3% of a silane coupling agent, and from about 1% to about 15% of a surfactant.

60. The method of claim 50 wherein the coating material comprises a tackifying composition.

61. The method of claim 60 wherein the tackifying composition comprises a polyamide, a polyester, a polycarbonate, a polycarbamate, a natural resin, or a combination thereof.

62. The method of claim 51 wherein the density-reducing material comprises micro-material.

63. The method of claim 50 wherein the density-reducing material comprises low-density material similar in size to the particulate material.

64. The method of claim 50 wherein the particulate material is coated with the coating material on-the-fly.